REMARKS

The Office Action of April 4, 2006 and the Examiner's Answer of July 25, 2007 , have been carefully studied. Claims 13, 14 and 17-22 currently appear in this application. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicant respectfully requests favorable reconsideration and formal allowance of the claims.

Claim Amendments

Claims 13 and 22 have been amended to recite that both the first film/strip and the second film/strip are sufficiently porous with respect to acoustic or shock waves to allow the acoustic or shock wave to penetrate the film/strip to reach the flowable shock wave attenuating material. Support for this amendment can be found in the specification as filed at paragraph 0023.

It is important that the films/strips be porous to acoustic or shock waves so that the acoustic or shock waves can reach the shock attenuating material contained in the cells or recesses. That is, the films/strips must be such that the shock or acoustic wave can readily penetrate the film so that the energy of these waves is absorbed by the shock attenuating material.

What is Claimed

The flexible sheets claimed herein are marketed as BLASTWRAP®, and are at this moment protecting Metro riders from explosive devices placed into trash receptacles in Metro stations. The flexible sheets are wrapped around the inside of the

trash receptacles and under the tops of the trash receptacles to protect passengers and Metro employees from the effects of a bomb dropped into the trash receptacle.

The flexible assembly claimed herein is also useful in protecting the bottoms of military vehicles from mines embedded in roads or paths over which the vehicles traverse.

As can be seen from the prosecution history, there are a great many assemblies made of flexible sheets having some sort of pocket or cell that holds a variety of mate ails. However, NONE OF THESE ASSEMBLIES HAS ANYTHING TO DO WITH BLAST MITIGATION OR SHOCK ABSORPTION.

The blast attenuating material encased in the flexible assembly claimed herein is described on page 7 of the specification as a material that acts in the nature of a liquid to resist relative displacement by surface tension and viscous forces, as well as the ability to substantially scatter and disperse pressure conditions transmitting there trough by virtue of multitudinous curved surfaces dividing gaseous and solid or liquid phases. This enables the generation of turbulent flow fields by transmitting pressure conditions. That is, the material resists shear forces in the nature of fluid viscosity. The attenuating medium assumes the shape of the cells or recesses, while at the same time resisting applied shear forces in the nature of viscosity.

Explosive devices produce shock waves, which produce a highly damaging phenomenon known as blast. Shock once created, shock waves propagate outward from the source of the explosion shocks propagating away from the source of the explosion will generally be expected to drop in pressure very rapidly but this depends upon the area surrounding the explosion.

Although flat panels filled with shock-absorbing material are most effective in attenuating blasts, flat panels are not useful in protecting structures or objects that are not flat, such as waste containers, airplane cargo holds, and the like.

The present inventors have developed a blast attenuating material comprising two flexible films bonded together to form pockets or cells, the pockets or cells holds a shock attenuating material such as perlite. The sheets can be cut at the seams to any desired size without loss of the shock attenuating material. The flexible sheets can be arranged in any configuration so as to protect trash containers, airplane cargo holds, and the like.

The flexible sheets are porous to shock waves, so that the shocks waves immediately impinge on the shock absorbing material. The shock absorbing material has the flow properties of a fluid, so that the shock waves pas rapidly through the film into the material, which absorbs energy from the shock wave. This creates turbulent zones and large numbers of miniature shock waves as energy from the shock wave passes into and through the flowable attenuating medium. Substantial energy from the shock wave is thus absorbed by the attenuating medium, enhanced by the confinement of the material within the cells.

There are many patents showing a variety of flexible sheets having pockets between the sheets which contain materials for a variety of purposes, including refrigeration, foot cushioning, erosion control, etc. However, the present inventors are the first to produce an assembly that is flexible and can successfully be used to contain blasts. This limitation is contained in the preamble to the claims, namely, "A flexible shock-attenuating assembly."

The shock-attenuating assembly claimed herein is for attenuating shock waves from blasts resulting from explosive devices and the like. Explosive devices produce blast fragments emanating both from the device and from material close to the point of explosion. Additionally, explosive devices produce shock waves, which produce the highly damaging phenomenon known as "blast." Pressure waves can be reflected and diffracted by phase boundaries, such as liquid droplets or solid particulates suspended in air. These deflections serve to increase the distance that the wave travels by a process of multiple reflections and diffractions. Scattering and dispersion thus produce more attenuation because they smear the discontinuity leading the shock wave, the result of which is a significant drop in pressure in the material.

The mechanisms of the shock attenuating materials used in the herein claimed shock attenuating assembly are discussed in the specification at paragraphs 0045 through 0049. When the blast attenuating material is an aqueous foam, substantial energy is removed from an incident pressure wave by scattering at the multiple interfaces presented by bubble wall liquids and the entrapped gas which comprise the basic units of aqueous foam structures, and through the displacement of the liquid in the aqueous foam. A similar effect is obtained when solid bed materials are used, particularly solids with entrained gas, such as vermiculite and organic solid foams. Additional energy and thus attenuating of transmitting pressure waves is accomplished by cancellation. The decay of the wave is related to the work done as the wave travels through the medium and how long it remains in the medium. Perlite and foam shock absorbing materials dramatically reduce the sound speed of the shock, as scattered, slowed, and reflected waves become coincident. The propagation paths of pressure

waves through the shock absorbing material are substantially lengthened by their scattering and disposition.

It is clear from the specification that the presently claimed assembly is for blast or shock attenuation, not for any other purpose. The preamble of the claims, "A shock-attenuating assembly", defines the invention, which is further characterized by the fact that the assembly includes "a shock wave attenuating material having the flow properties of a liquid." As the Federal Circuit stated in *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc*, 868 F.2d 1251, 9 USPQ2d 1962 (Fed. Cir. 1989): "The determination of whether preamble recitations are structural limitations or mere statements of purpose or use can be resolved only on review of the entirety of the patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim."

The present case is similar to the situation in *Corning*, supra, in that the defendant alleged that the claim was anticipated by a disclosure of a substantially transparent luminescent glass in the form of a fiber comprised of a doped silica core having a sheath of silica. Although nothing in the cited patent discussed the use of the fiber as an optical waveguide, the defendant alleged that the fiber "inherently" could function as a waveguide. In *Corning*, the plaintiff defined the preamble words "an optical waveguide" in the specification. In *Corning*, it was clear from the specification that the inventors were working on the particular problem of an effective optical communication system, not on general improvements in conventional optical fibers. "To read the claim in light of the specification indiscriminately to cover all types of optical fibers would be divorced from reality. The invention is restricted to those fibers that work as waveguides as defined in the specification, which is not true with respect

to fibers constructed with the limitations of paragraph (a) and (b) only. Thus, we conclude that the claim preamble in this instance does not merely state a purpose or intended use of the claimed structure. Rather, those words do give 'life and meaning' and provide further positive limitations to the invention claimed."

In a similar manner, the present specification defines a shock-attenuating assembly as one providing shock wave, and therefore blast, attenuation capabilities in both confined spaces and unconfined areas, as described in paragraphs 0016 and 0020. The problems in dealing with explosive devices are presented in great detail in the "Background" section of the present application, at paragraphs 0002 to 0005.

Art Rejections

Claims 13 and 17-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Colle, US 4,184,788.

This rejection is respectfully traversed. There is absolutely nothing in Cole that even suggests shock attenuation or absorption. Colle uses "flowable material" that can be any kind of conventional cementitious slurries which can harder when exposed under a body of water. Since these slurries harden, it is clear that they cannot be flowable when the Colle device is in use. Also, if the asphalt used in Colle is "flowable", why would it be used to build roads? Asphalt may be "flowable" when it is being applied, but it is clear that asphalt must be a solid if it is to function as a road surface. The Colle material cannot possibly have the flow properties of a liquid.

Claims 13 and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munch, US 4,700,766 in view of Colle.

This rejection is respectfully traversed.

Contrary to the Examiner's assertion that Munch discloses an assembly comprising a shock wave attenuating material, Munch at column 3, lines 50-67. specifically cited by the Examiner, describes a **non-flowable** mixture of water, glycol, salt and finely dispersed silica gel. This is completely different from the shock attenuating material as claimed herein, which has the flow properties of a liquid.

There is nothing in either Munch or Colle that suggests using a filler that has the flow properties of a liquid, because both Munch and Colle discloses non-flowable filling materials.

Claims 13 and 17-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Poux. US 2,602,302. The Examiner alleges that Poux contains shock wave attenuating material as described at column 4k lines 7.

In reality, Poux describes liquid-filled compartments containing a liquid such as water and a suitable refrigerant. There is nothing in Poux regarding shock absorption, only refrigeration.

Chains 13 and 17-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ava, US 3,795,994.

This rejection is respectfully traversed.

The Examiner alleges that the pockets in Ava are filled with a shock-attenuating material (column 2, lines 16-18). In reality, the pockets in Ava are filled with air. These devices are cushions for footwear, and have nothing to do with shock absorption. In fact, air is not a blast absorbing material, so Ava cannot possibly anticipate the herein claimed assembly.

Claims 13, 17, 18, 20 and 22 are rejected as being anticipated by Bertram, US 4,716,598.

This rejection is respectfully traversed.

Bertram discloses a heat insulating assembly in which the pockets are filled with polystyrene beads. There is nothing in Bertram about a shock-wave attenuating material, nor would one expect the filling to be a shock-attenuating material, since Bertram discloses a heat insulating assembly.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bertram in view of Synons, 5,309,690.

This rejection is respectfully traversed.

The Examiner concedes that Bertram does not disclose perlite as a shock attenuating material. However, there is no reason to expect that Bertram would even suggest perlite as a shock attenuating material, since Bertram is concerned with heat insulation, not blast mitigation. There is no motivation for one skilled in the art to substitute the Symons material for that in Bertram.

Substituting one type of material for another, as in Symons, would be substituting one type of sound or heat insulation for another, not one type of blast mitigating material for another.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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